

Coccidiosis, the Most Common Cause of Diarrhea in Young Goats

Jean-Marie Luginbuhl

Extension Meat Goat Specialist

Kevin L. Anderson

Professor of Ruminant Medicine

College of Veterinary Medicine

What is coccidiosis?

Coccidiosis is the most common cause of diarrhea in goats between 3 weeks and 5 months of age. This is particularly true when goats are housed in confinement. Coccidiosis is most likely to strike young goats shortly after weaning because of the stress of being suddenly separated from their dam.

Coccidiosis is caused by microscopic protozoan parasites called coccidia (*Eimeria* spp.). Coccidia live in the intestinal cells of goats. Coccidia go through a complex “life cycle” in the intestinal cells. In the process, they produce large numbers of eggs (oocysts) that are passed in the feces. In the process of growth and multiplication in the goat intestinal epithelial cells, the coccidia may destroy many intestinal cells. This may cause diarrhea and other signs of coccidiosis.

Nearly all (or most) adult goats carry coccidia in their intestines. The very small eggs or oocysts passed in the feces of adult goats hatch in the environment and goat kids pick up the infective stages of the coccidia either directly from the manure or in contaminated feed and water. When present in small numbers, coccidia normally are not a problem. Therefore, the number of coccidia that invade the intestines will determine the severity of the infection. There are many different species of coccidia, some being non-pathogenic, and others being either mildly, moderately, or severely pathogenic. In other words, feces may for example contain a high number of non-pathogenic coccidia eggs, or a low number of the most severe pathogenic coccidia eggs. In general, if the animals do not show any clinical signs, the infection is not significant.

In the presence of appropriate temperature, moisture and oxygen, coccidia eggs (oocysts) passed in the feces sporulate (hatch) and become infective in one to several days and can readily contaminate feed and water. Upon ingestion by other goats, these sporocysts pass through the stomach and into the intestines. Then the sporocysts invade the lining of the intestines and undergo several changes. Sick, young and stressed goats (weaning is extremely stressful on kids) are more susceptible and in these cases the coccidia may proliferate. It is this damage, the

destruction of cells lining the intestines and the rupturing of blood vessels, which give rise to the symptoms of coccidiosis.

When a coccidiosis outbreak begins, only good sanitation and isolation of sick animals will prevent its spread through the herd. Coccidia eggs are resistant to many disinfectants and may survive more than a year in the environment. They will stay alive in a pasture as long as they are in a moist and dark environment, but will die when temperatures drop below freezing. Goats that survive coccidiosis develop a degree of immunity to future coccidia problems.

What are the symptoms of coccidiosis?

The symptoms of coccidiosis are divided into two categories: subclinical and clinical. Subclinical cases result in a decrease in feed intake and weight gain, and are difficult to detect because of the absence of diarrhea. Clinical cases can vary from some loss of appetite and decrease in weight gain and slight, short lived diarrhea to severe cases involving great amounts of dark, bloody and foul smelling diarrhea, fluid feces containing mucous and blood, persistent straining in attempt to pass feces, loss of weight, rough hair coat, dehydration, and in some cases death within 24 hours. The primary pathology associated with coccidiosis involves intestinal cell destruction. Scarring and rupture of the cilia of the lining of the intestines following treatment or recovery may result in permanently unthrifty and stunted goats because the ability of these goats to absorb digested food is impaired. Diagnosis is based on history, symptoms and microscopic examination. Presence of coccidia eggs in the feces of normal goats indicates that the goats are infected, but not necessarily diseased. Coccidia eggs (oocysts) can be found in the feces of most goats, including healthy goats.

How to minimize the risk and/or to prevent coccidiosis?

Good husbandry practices are the best preventive measures against coccidiosis. Regular removal of manure and wasted feed, not feeding on the ground, designing feeders and water systems that minimize fecal contamination, providing a clean source of water, cleaning water tanks and feeders regularly, making sure that watering systems do not leak and that sufficient sunlight enter buildings are examples of such husbandry practices. If goats are kept on solid floors during the winter, maintaining clean and dry bedding is important.

On farms where coccidiosis problems keep recurring, it may be advisable to treat the herd preventively. Several choices are available depending on the situation:

1. Feeding feeds containing a coccidiostat:
 - a. Decoquinate (Deccox®). Feeds containing Deccox® are available commercially.
Decoquinate is approved for goats.
2. Drenching goats with oral dose of amprolium solution (Corid® - 9.6%). Treat all adult goats, yearlings, and especially kids because kids are especially susceptible at weaning.
Amprolium is not labeled for goats.
3. Alternatively, adding amprolium (Corid®) to the drinking water. During treatment, it is important to limit the water supply of the goats and to make sure that they do not have access to any other water source. Be aware that adding amprolium (Corid®) to the drinking water can be wasteful

and expensive, as positive results cannot be guaranteed because they strongly depend on water consumption by the goats.

4. Other feeds containing coccidiostats:
 - a. Monensin (Rumensin®).
Monensin is labeled for goats.
 - b. Lasalocid (Bovatec®).
Lasalocid is not labeled for goats.

How to treat coccidiosis?

When goats come down with the symptoms of coccidiosis:

1. Drenching them orally with amprolium (Corid® - 9.6%) **for 5 consecutive days. This is the most effective form of treatment. Amprolium is not labeled for goats**
2. Sulfa drugs (sulfadimethoxine) such as Albon® are most effective in the early stages of acute infections when coccidia are multiplying rapidly. Sulfa drugs may not cure all stages of coccidiosis but are often given to infected goats to prevent secondary infections such as bacterial enteritis. **Sulfadimethoxine is not labeled for goats.**

ADVICE and CAUTION

1. **Whether treating goats against coccidiosis preventively or goats having come down with the clinical symptoms of coccidiosis, always consult first with an animal health specialist (local veterinarian, cooperative extension agent, etc.) for specific directions about which product and dosage to use, the route of administration (feed or oral), meat and milk withdrawal times, etc.**
2. A vitamin B1 (thiamine) deficiency can be created by using amprolium (Corid®) too often. It is advisable to give animals an injection of Thiamin hydrochloride when treating goats against coccidiosis for 5 consecutive days.
2. Amprolium (Corid®) has a 24-hour meat withdrawal before harvest.
3. Sulfadimethoxine (Albon®) has a 7-day meat withdrawal before harvest.

What are the important facts to remember about coccidiosis?

1. Coccidia are very host specific. Therefore the species of coccidia that infect goats infect goats only. Coccidia found in birds, cattle, dogs, and rabbits will NOT infect goats. The coccidia of sheep, however, may be responsible for some infection in goats and therefore should be regarded as suspect.
2. Virtually every goat has some level of infection, but illness occurs only in some animals. Fecal samples from virtually any goat of any age, sex, breed, and physiological stage will contain coccidia eggs.

3. **THE DISEASE IS ALMOST ALWAYS GOING TO OCCUR IN YOUNG ANIMALS. KIDS LESS THAN 5 MONTHS OF AGE ARE ESPECIALLY SUSCEPTIBLE.** Kids will become infected early on from the environment. Adults will have immunity to the parasite that is pretty effective in preventing disease, but not infection.
4. The primary sign of coccidiosis is diarrhea. Look for the signs of the infection in stressed animals. Happy, well-nourished kids left with their dam may show no diarrhea until they are weaned. **THE STRESS OF WEANING MAY DEPRESS IMMUNITY ENOUGH FOR THE COCCIDIA TO GET THE UPPER HAND AND CAUSE INFECTION.**
5. Good husbandry practices are the best preventive measures against coccidiosis such as removing manure, feeding off the ground, not letting goats jump into feeders (a real challenge), cleaning feed troughs and water tanks regularly, etc. Coccidiostats include amprolium (Corid®), decoquinate (Deccox®), monensin (Rumensin®), lasalocid (Bovatec®) and sulfadimethoxine (Albon®). These products may be used in the feed or water to prevent the development of the infection.
Amprolium(Corid®), lasalocid (Bovatec®) and sulfadimethoxine (Albon®) are not labeled for goats.